

2. (1.75 points)

Given the following policies for an insurance company:

Policy	Effective Date	Expiration Date	Written Premium
A	March 1, 2017	February 28, 2018	1,200
B	June 1, 2017	November 30, 2017	1,500
C	July 1, 2017	June 30, 2018	2,000
D	October 1, 2017	September 30, 2018	750
E	January 1, 2018	December 31, 2018	900
F	April 1, 2018	September 30, 2018	1,650
G	August 1, 2018	July 31, 2019	1,350

a. (0.25 point)

Calculate the written premium for the fiscal year ending July 31, 2018.

b. (0.25 point)

Calculate the in-force premium as of December 15, 2018.

c. (0.5 point)

Calculate the 2018 calendar year written premium if Policy C is cancelled on March 31, 2018.

d. (0.5 point)

Discuss if it is appropriate for this insurer to estimate earned premium for the current year by averaging the in-force premium at the end of the current year and prior year.

e. (0.25 point)

Identify one potential use of in-force premium other than estimating earned premium.

FALL 2019 EXAM 5 – SAMPLE ANSWERS AND EXAMINER’S REPORT

QUESTION 2	
TOTAL POINT VALUE: 1.75	LEARNING OBJECTIVE(S): A2
SAMPLE ANSWERS	
Part a: 0.25 point	
<u>Sample 1</u> $750 + 900 + 1950 = 3300$	
<u>Sample 2</u> WP from 8/1/17 to 7/31/18 This includes policies D, E & F $750 + 900 + 1950 = 3300$	
Part b: 0.25 point	
<u>Sample 1</u> $900 + 1350 = 2250$	
<u>Sample 2</u> Inforce Prem as of Dec. 15, 2018 <div style="margin-left: 20px;"> + E 900 + G <u>1350</u> 2250 </div>	
Part c: 0.5 point	
<u>Sample 1</u> $900 + 1650 + 1350 - (3/12) * 2000 = 3400$	
<u>Sample 2</u> CY 2018 Written: Policy E, F, G. And C Cancelled. E.F.G. Total Written: $900 + 1650 + 1350 = 3900$ C cancelled: $-2000 \times (3/12) = -500$ Total Written = $3900 - 500 = 3400$	
<u>Sample 3</u> 2018 CY WP = 2018 CY EP + Δ unearned prem $2018\text{ CY EP} = 1200(2/12) + 2000(3/12) + 750(9/12) + 900(12/12) + 1650(6/6) + 1350(5/12) = 4375$ Unearned Prem @ 12/31/17 = $1200(2/12) + 2000(6/12) + 750(9/12) = 1762.50$ @ 12/31/18 = $1350(7/12) = 787.5$ $2018\text{ CY WP} = 4375 + (787.5 - 1762.5) = 3400$	
Part d: 0.5 point	
<u>Sample 1</u> No, it does not take into account if the book is growing/shrinking. This book is not written uniformly and has little data. The estimate would be volatile.	

FALL 2019 EXAM 5 – SAMPLE ANSWERS AND EXAMINER’S REPORT

Sample 2

This is not an appropriate estimation in this example because not all policies have the same duration nor are they written uniformly throughout the year.

Sample 3

Given policies are not written uniformly throughout the year, plus some policies (i.e. pol B, F) has less than a year premium, using the average of in force will not be correct.

Sample 4

No, it is not appropriate for this insurer to estimate EP that way. Not all policies are annual and premium is written at different amounts during different times of the yr. This would not be a good/accurate indication.

Part e: 0.25 point

Sample 1

Inforce premium can be used to calculate the impacts of rate changes.

Sample 2

Determine current potential for loss.

Sample 3

In-force premium could be used to estimate how much reinsurance to purchase.

Sample 4

We can compare in-force prem at different times to see if the book is shrinking or expanding.

Sample 5

Used to estimate seasonality of the business throughout the year.

EXAMINER’S REPORT

Candidates were expected to demonstrate knowledge of in-force premium, written premium, and earned premium. They were expected to know how to calculate premium using different aggregation methods, and some practical applications of different premium types.

Part a

Candidates were expected to know how to calculate written premium over a calendar year from August 1, 2017 to July 31, 2018.

Common mistakes included:

- Selecting a fiscal year that was greater than or less than 12 months (e.g. June 1, 2017 to July 31, 2018)
- Adding up the written premium for all policies, rather than limiting them to a 12 month fiscal year

Part b

Candidates were expected to calculate the in-force premium as of December 15, 2018.

Common mistakes included:

- Assuming that policy F was 12 months, and was still in-force on December 15, 2018

FALL 2019 EXAM 5 – SAMPLE ANSWERS AND EXAMINER’S REPORT

Part c

Candidates were expected to identify policies E, F, and G as being written in 2018. Candidates were also expected to recognize how the cancellation of policy C effects 2018 written premium.

Common mistakes included:

- Assuming that since policy C was originally written in 2017, that its cancellation in March 2018 did not affect 2018 calendar year written premium
- Calculating 2018 calendar year earned premium instead of written premium

Part d

Candidates were expected to identify why it was inappropriate to estimate earned premium by averaging the in-force premium, especially as it pertains to the insurer in this question.

Saying “timing of policies”, “different effective dates” or “cancellation of policies”, without additional detail, was not enough to receive full marks. Any insurance company that writes multiple policies will have different effective dates. Candidates were expected to connect the idea that the more uniform their policies were written, the more accurate the estimate would be.

Common mistakes included:

- Mentioning “stability of company” without specifying which elements of the company needed to be stable.
- Saying that the method of using in-force premium to estimate earned exposures was appropriate in the general case, without identifying any restrictions that would make the estimation method inaccurate.
- Showing the calculation without discussing the reasons that the calculation was inappropriate.

Part e

Candidates were expected to identify a practical application of in-force premium.

Common mistakes included:

- Answers that defined in-force premium rather than describe a way to use in-force premium (e.g.: “see the size of the business”, “see a list of policies in-force”)
- Answers that involved estimating earned premium, despite the question asking for “other than estimating earned premium”
- Using in-force premium to calculate a retention rate without considering changing premium per risk and how much new business was written in the year
- Using in-force premium to calculate unearned premium without describing the calculation
- Using in-force premium to calculate a loss ratio
- Using in-force premium to calculate a loss frequency